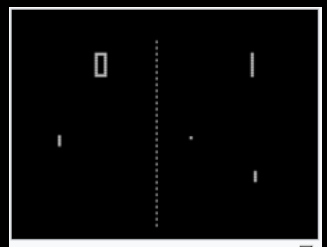
Microsoft

Microsoft MakeCode Arcade



The two paddles return the ball back and forth. The score is kept by the numbers (0 and 1) at the top of the screen.

What are Arcade Games?

An arcade game is a coin-operated video game machine.

Arcade games rose to popularity in the 1970's and 1980's.

The first successful Arcade game was called Pong, created by Atari in 1972.

MakeCode Arcade

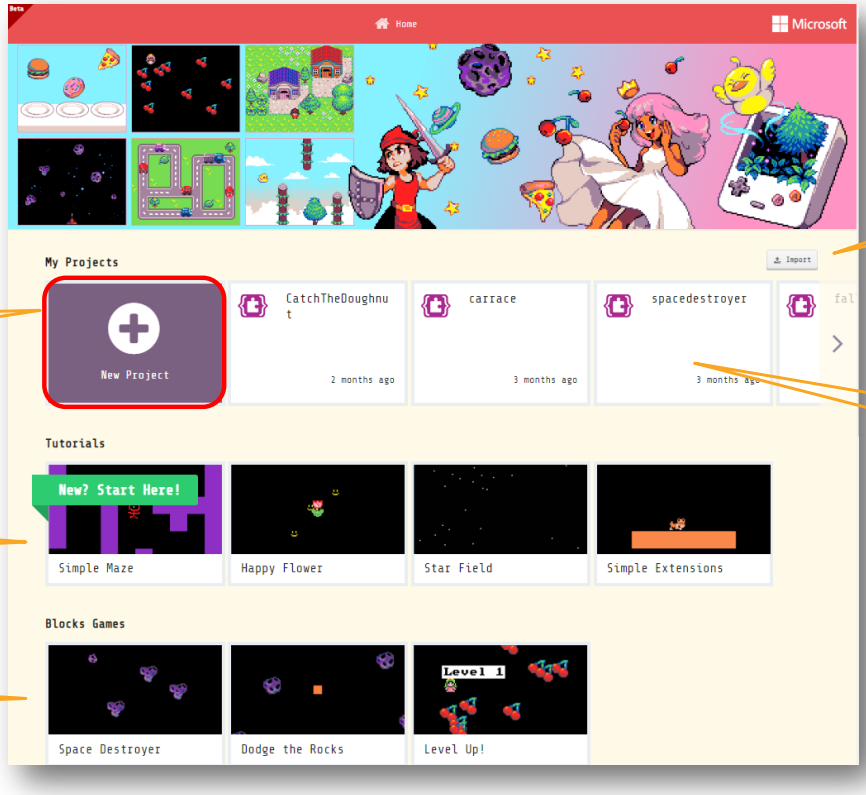
- 1980’s Retro Arcade Game Development Platform
- 2D Sprite-based games
- Block and JavaScript code editors
- Share and play others’ games
- Multi-player support & Hardware!

What are Sprites?

Getting familiar with MakeCode Arcade

Head to: https://arcade.makecode.com

Home Page



Create a New blank Project

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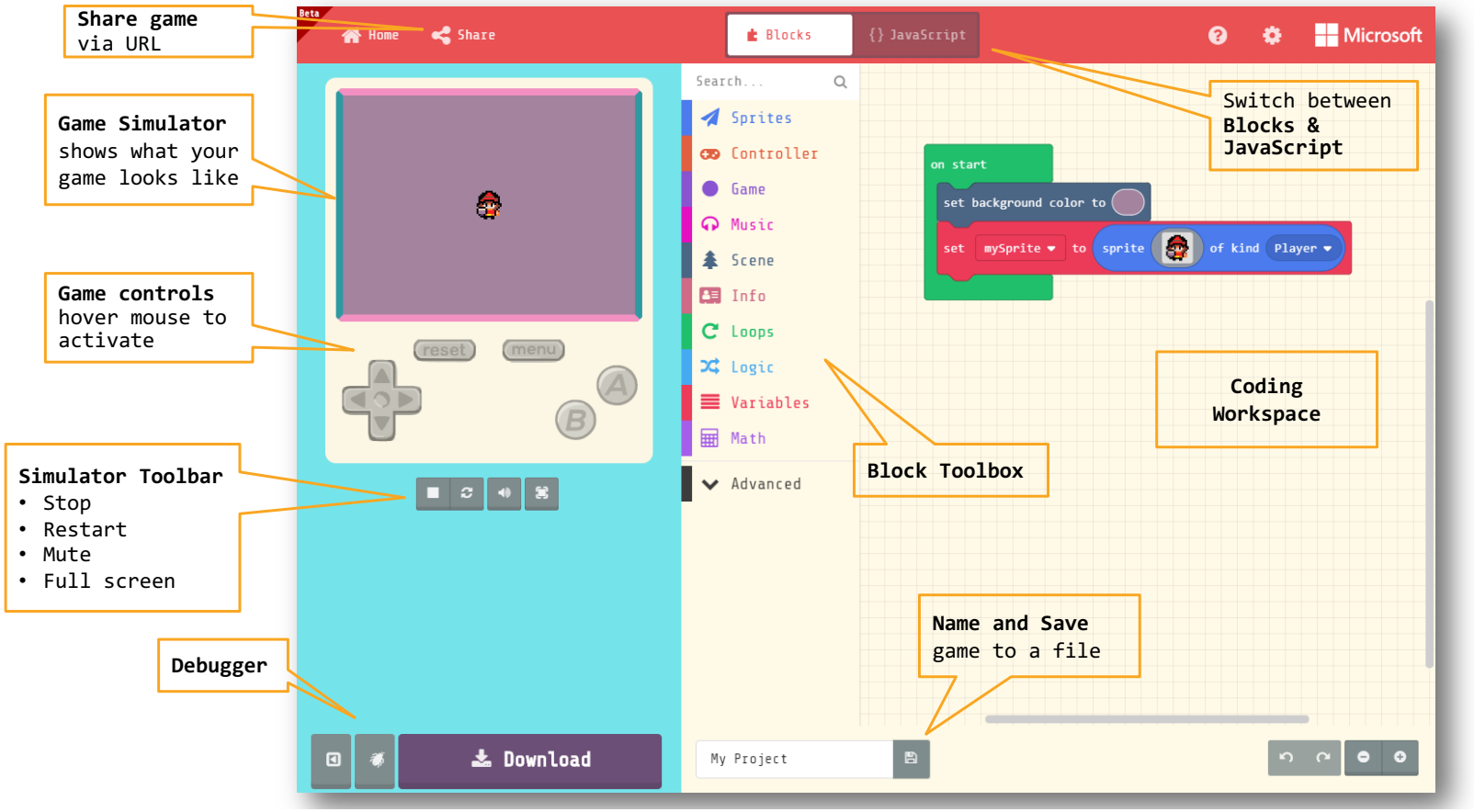
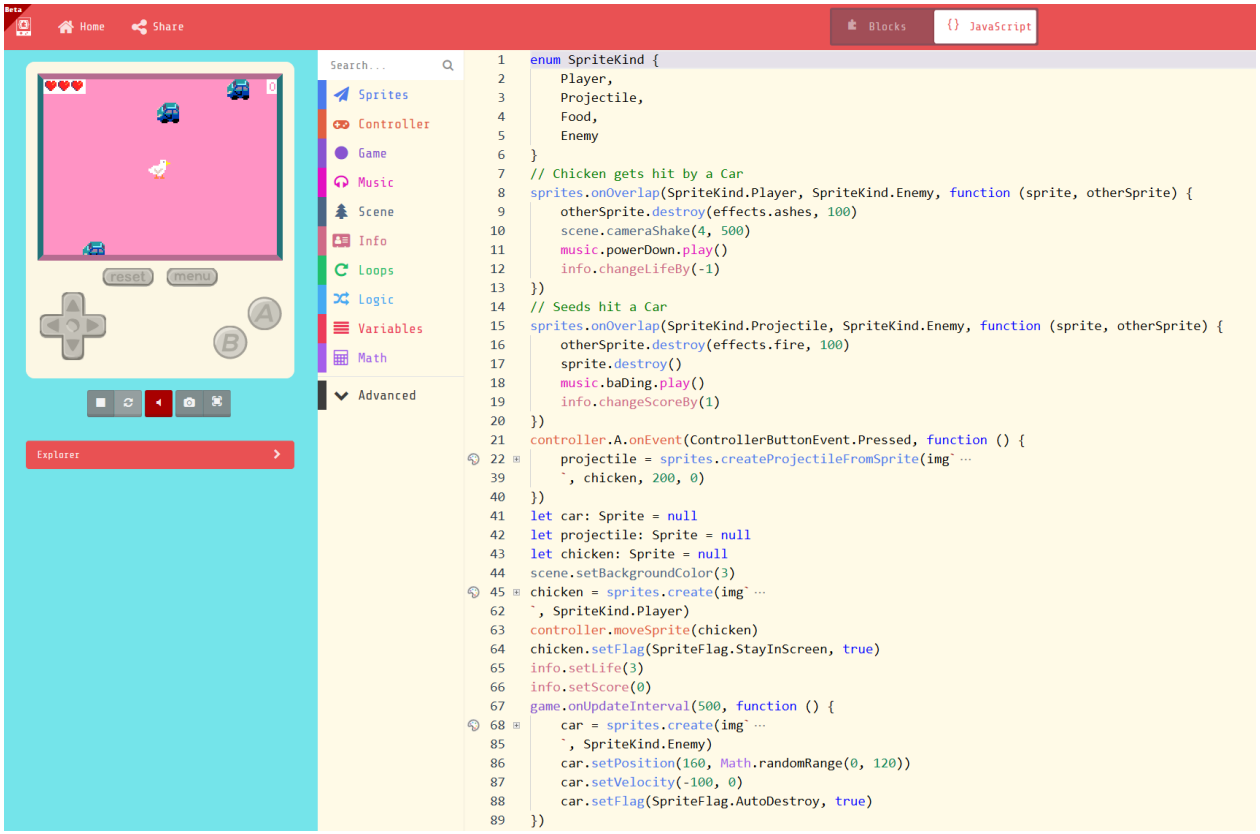
Step-by-step Tutorials

Game examples

Getting familiar with MakeCode Arcade



JavaScript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enum SpriteKind {
Player,
Projectile,
Food,
Enemy
}
// Chicken gets hit by a Car
sprites.onOverlap(SpriteKind.Player, SpriteKind.Enemy, function (sprite, otherSprite) {
otherSprite.destroy(effects.ashes, 100)
scene.cameraShake(4, 500)
music.powerDown.play()
info.changeLifeBy(-1)
})
// Seeds hit a Car
sprites.onOverlap(SpriteKind.Projectile, SpriteKind.Enemy, function (sprite, otherSprite) {
otherSprite.destroy(effects.fire, 100)
sprite.destroy()
music.baDing.play()
info.changeScoreBy(1)
})
controller.A.onEvent(ControllerButtonEvent.Pressed, function () {
projectile = sprites.createProjectileFromSprite(img`
`, chicken, 200, 0)
})
let car: Sprite = null
let projectile: Sprite = null
let chicken: Sprite = null
scene.setBackgroundColor(3)
chicken = sprites.create(img`
`, SpriteKind.Player)
controller.moveSprite(chicken)
chicken.setFlag(SpriteFlag.StayInScreen, true)
info.setLife(3)
info.setScore(0)
game.onUpdateInterval(500, function () {
car = sprites.create(img`
`, SpriteKind.Enemy)
car.setPosition(160, Math.randomRange(0, 120))
car.setVelocity(-100, 0)
car.setFlag(SpriteFlag.AutoDestroy, true)
})

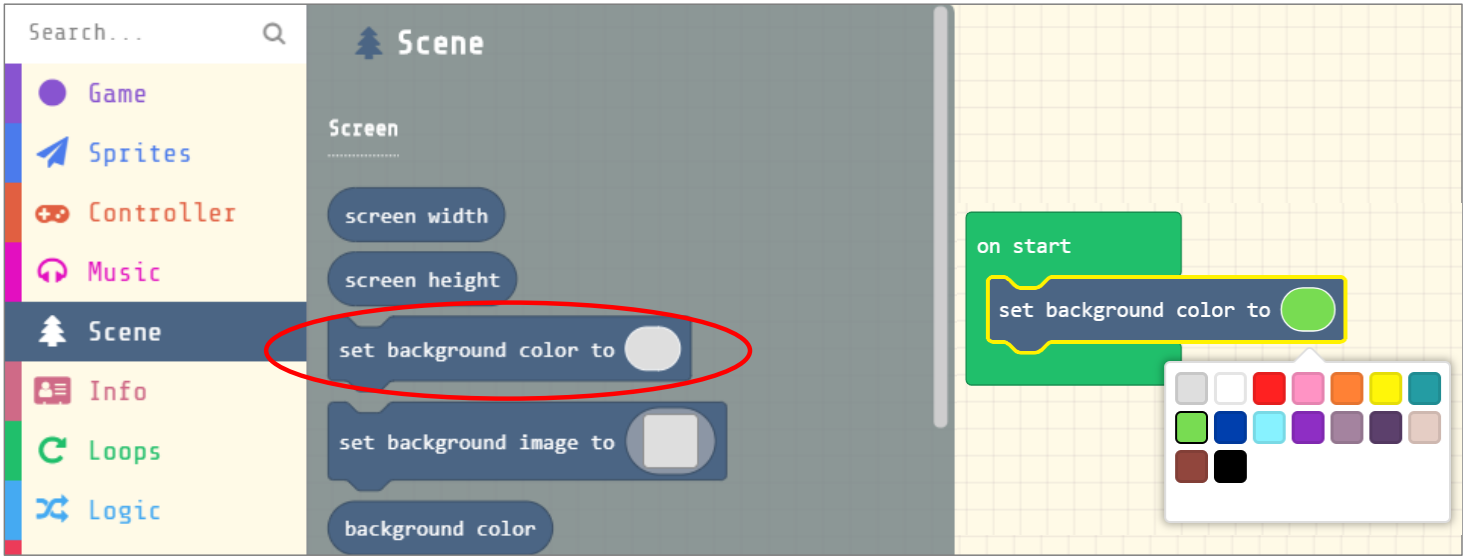
Create your first game

Why did the Chicken cross the Road?

Move your sprite around the screen, avoid cars and spit seeds!

Set the background

- From the **Scene** Toolbox drawer, drag a **Set Background Color** onto the Workspace
- Drop into the **On Start** block

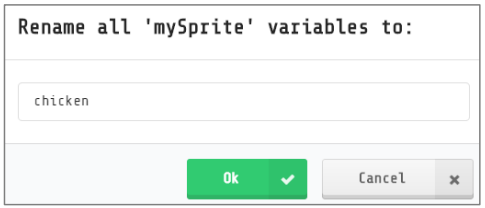


Select a background color

Create a Chicken Player Sprite

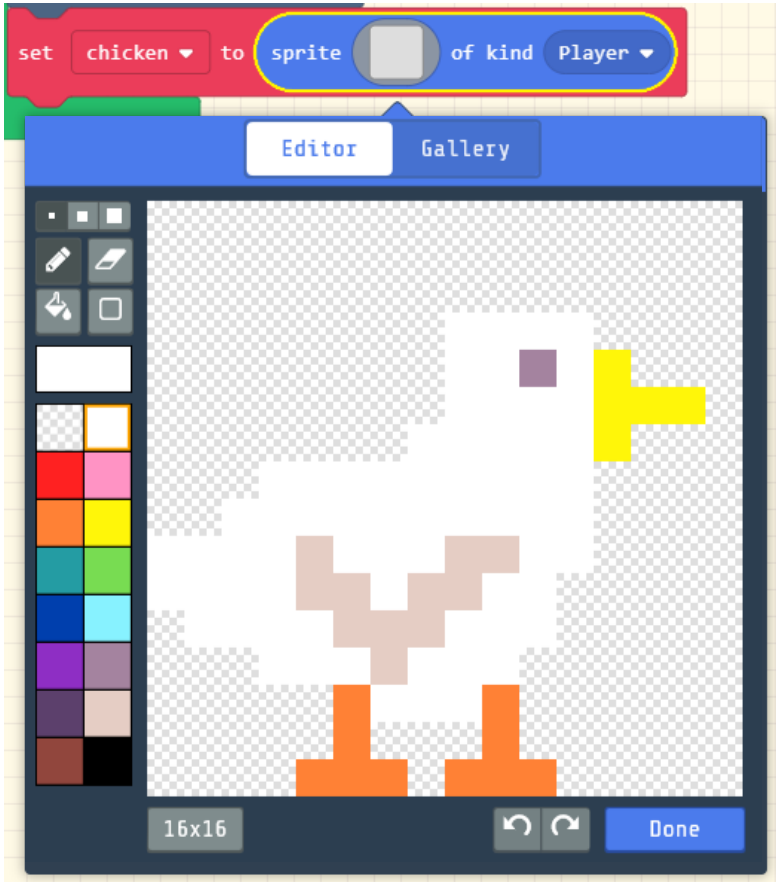
- From the **Sprites** Toolbox drawer, drag a **Set** sprite block onto the Workspace
- Drop into the **On Start** block after the **Set Background** block

- Click on the **mySprite** drop-down menu and select Rename variable
- Change the name to "**chicken**"



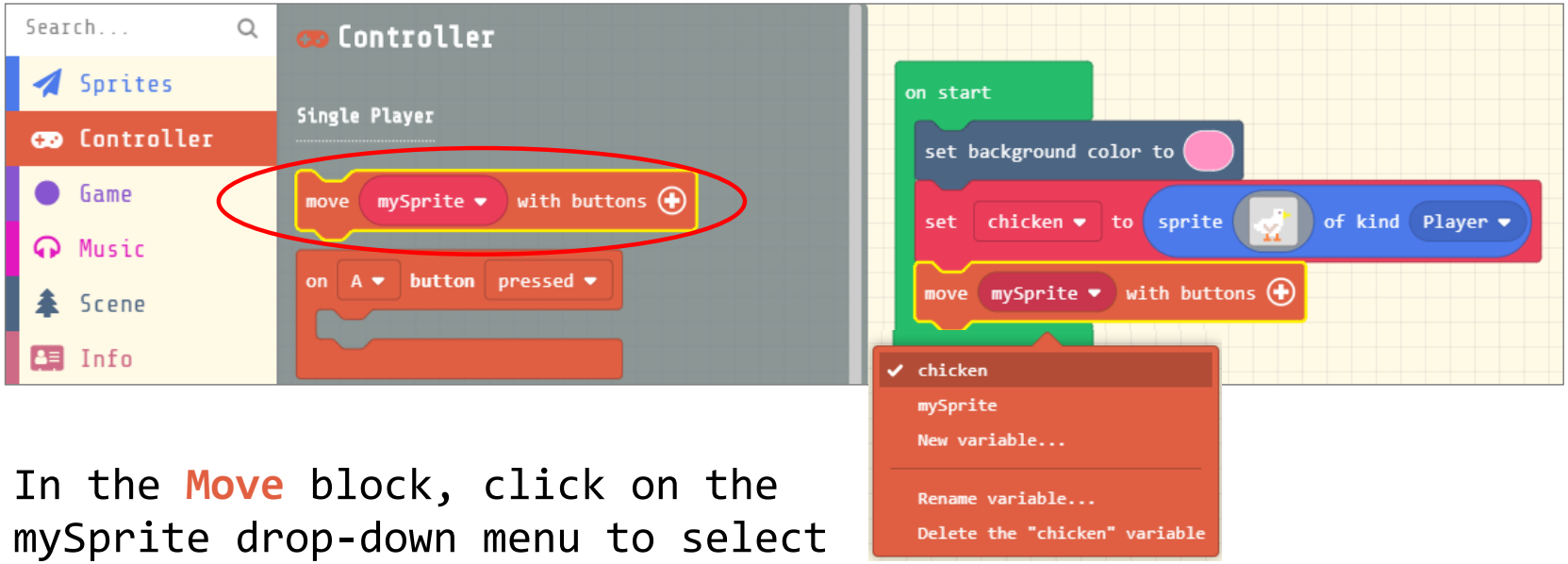
Design your Sprite

- In the **Sprite** block, click on the empty Image
- Design your own chicken image using the Image Editor
- When done, click Done



Control the movement of your Sprite

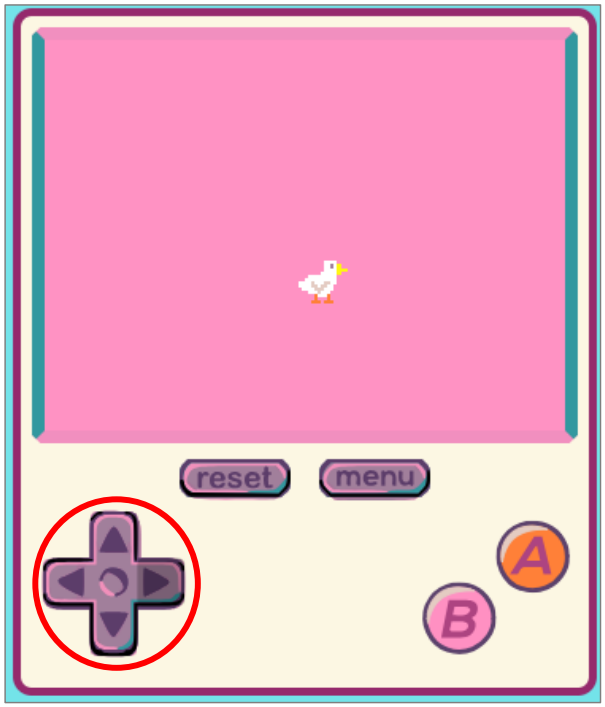
- From the **Controller** Toolbox drawer, drag a **Move** block, and drop after the **Set** sprite block



- In the **Move** block, click on the mySprite drop-down menu to select the **chicken** variable

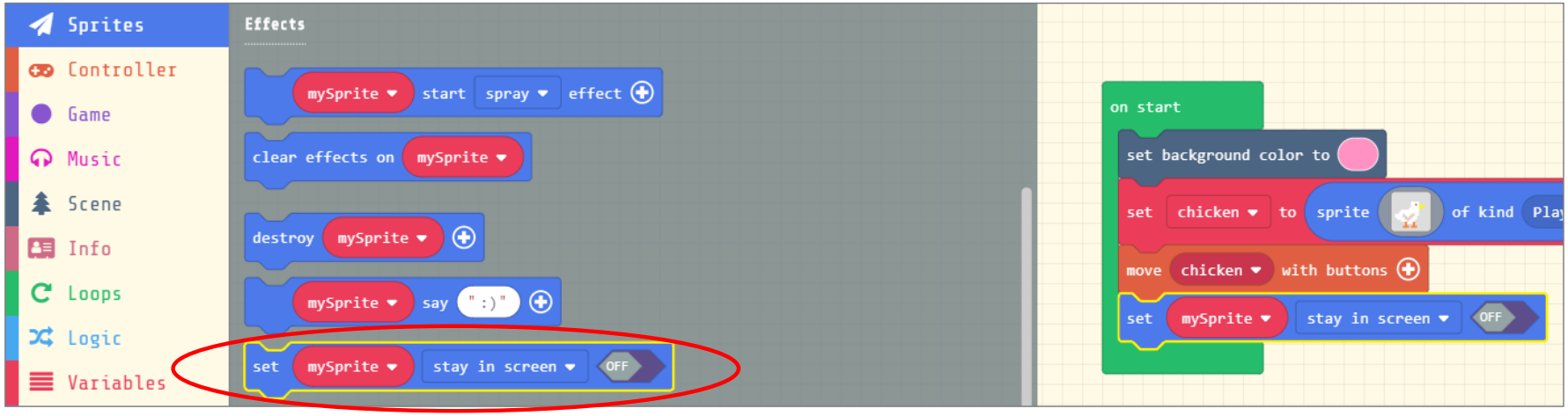
Try it out in Simulator

- Click on the direction arrow buttons in the Simulator to move your Sprite around the screen
- Or use the arrow keys on the keyboard (make sure the mouse is hovered over the Simulator to activate controls)

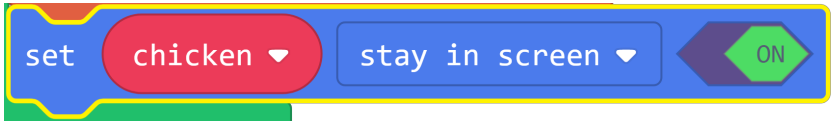


Stay in Screen

- From the **Sprites** Toolbox drawer, under the Effects category, drag a **Set sprite Stay in Screen** block, and drop after the **Move** sprite block

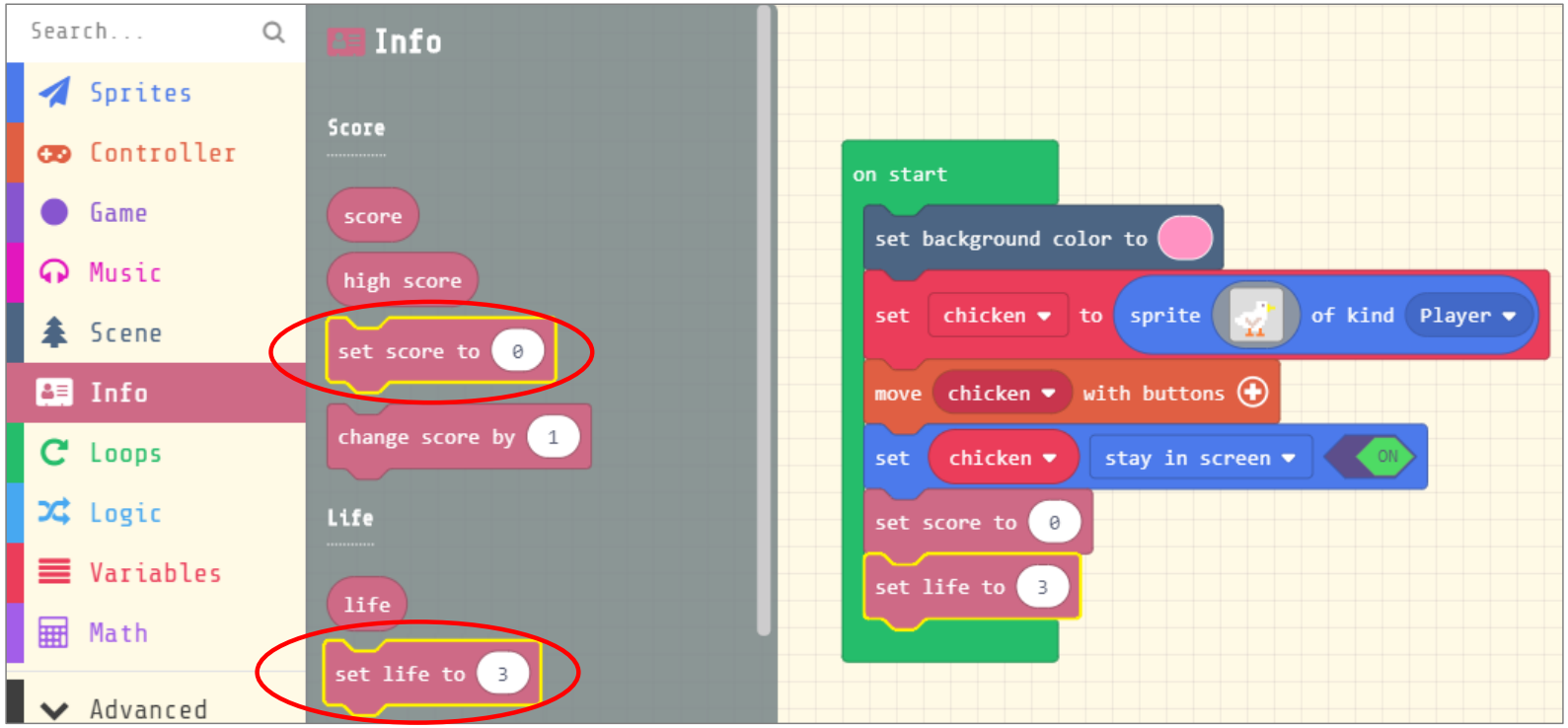


- In the **Set sprite Stay in Screen** block,
  - Select the **chicken** variable
  - Toggle the value to **On**



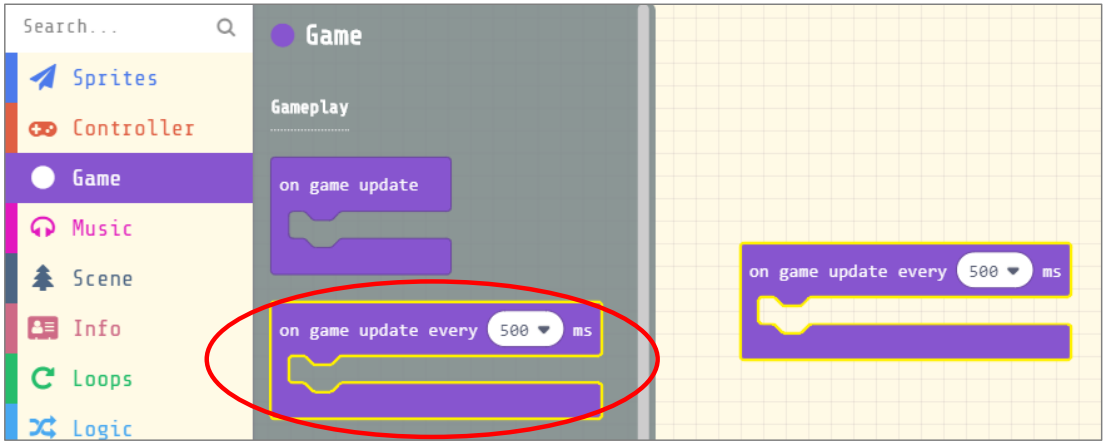
Initialize Life and Score

- From the **Info** Toolbox drawer, drag a **Set Score** and a **Set Life** block, and drop after the **Set sprite Stay in Screen** block

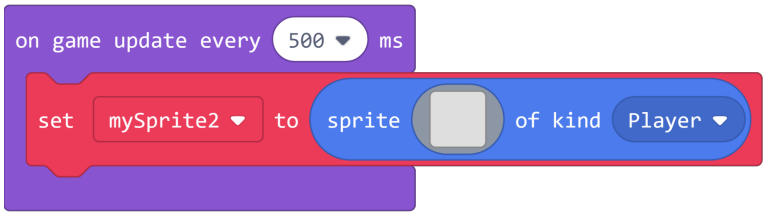


Create Car Enemy Sprites

- From the **Game** Toolbox drawer, drag a **On Game Update Every** block onto the Workspace

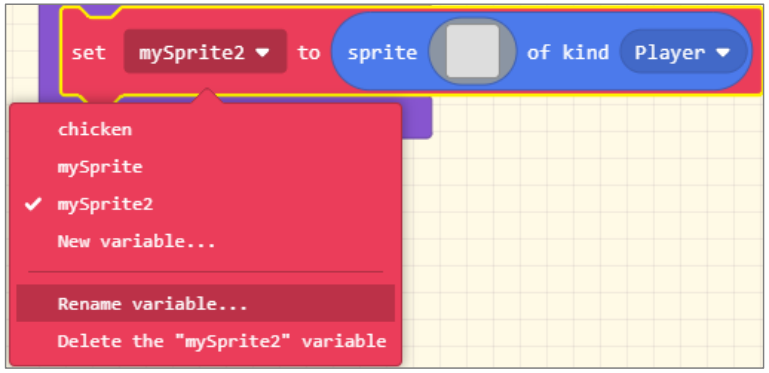


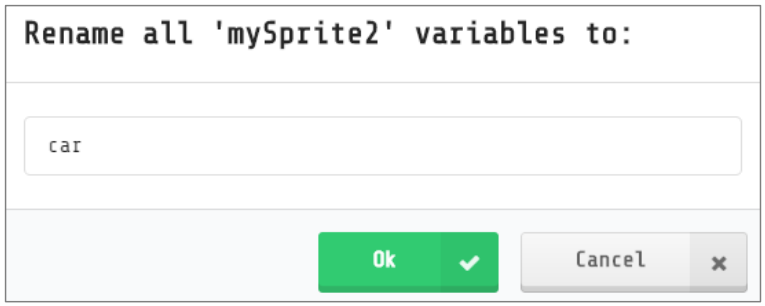
- From the **Sprites** Toolbox drawer, drag another **Set** sprite block, and drop into the **On Game Update Every** block



Create Car Enemy Sprites

- In the **Set** sprite block, click the drop-down to rename mySprite2 variable to “**car**”



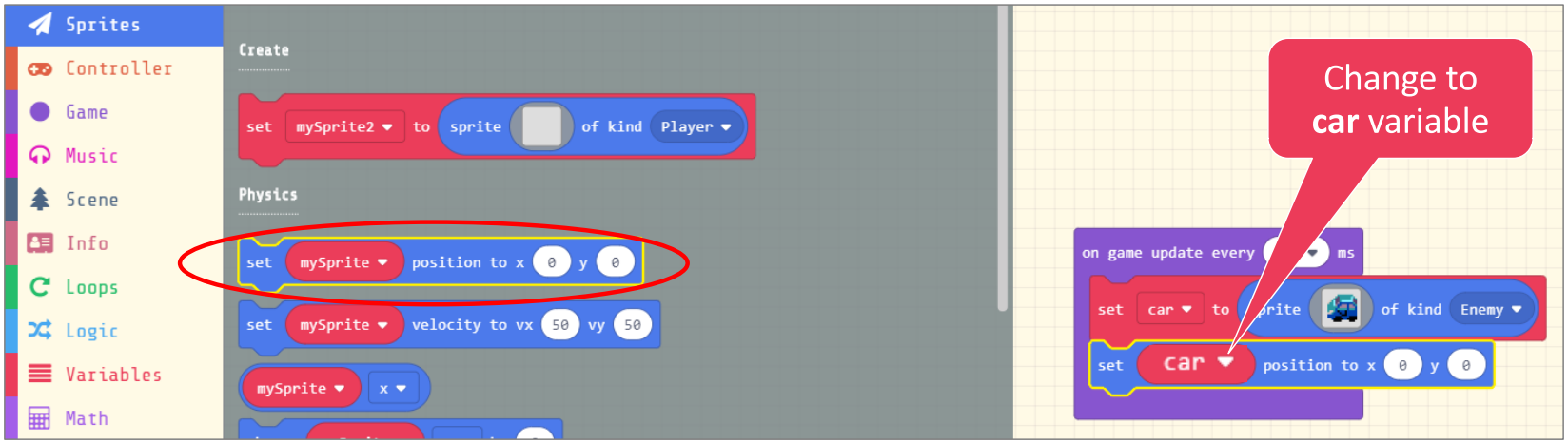


- In the **Sprite** block, click on the empty Image
- Click the **Gallery** and select a car image

Set Car Enemy position

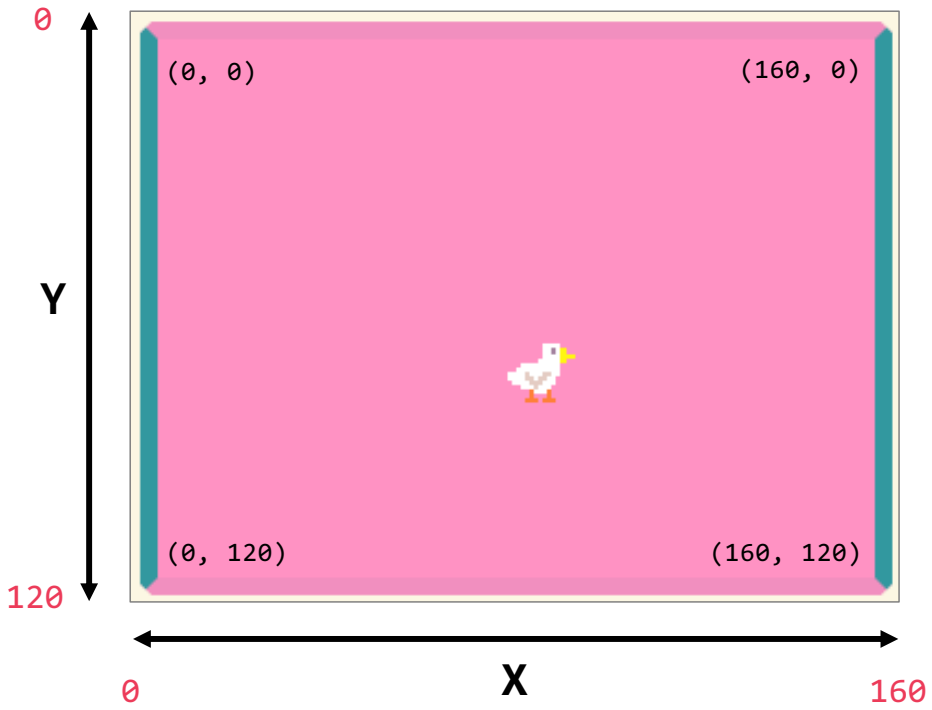
- In the **Sprite** block, click the drop-down to select an Enemy sprite kind

- From the **Sprites** Toolbox drawer, drag a **Set Position** block, and drop into the **On Game Update Every** block after the **Set** sprite block



Arcade Console Coordinates

The Arcade game screen dimensions are 160 width x 120 height



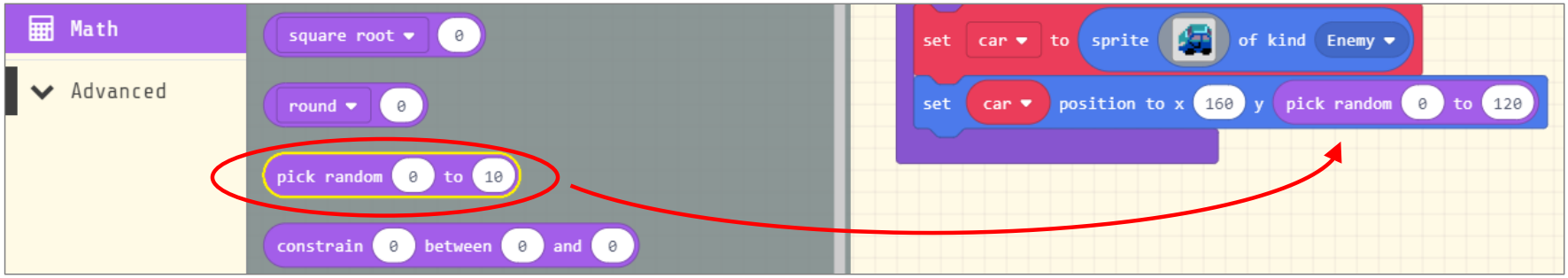
Set the position of the cars

- Set the position of the cars to enter on the right side of the screen

  X = 160

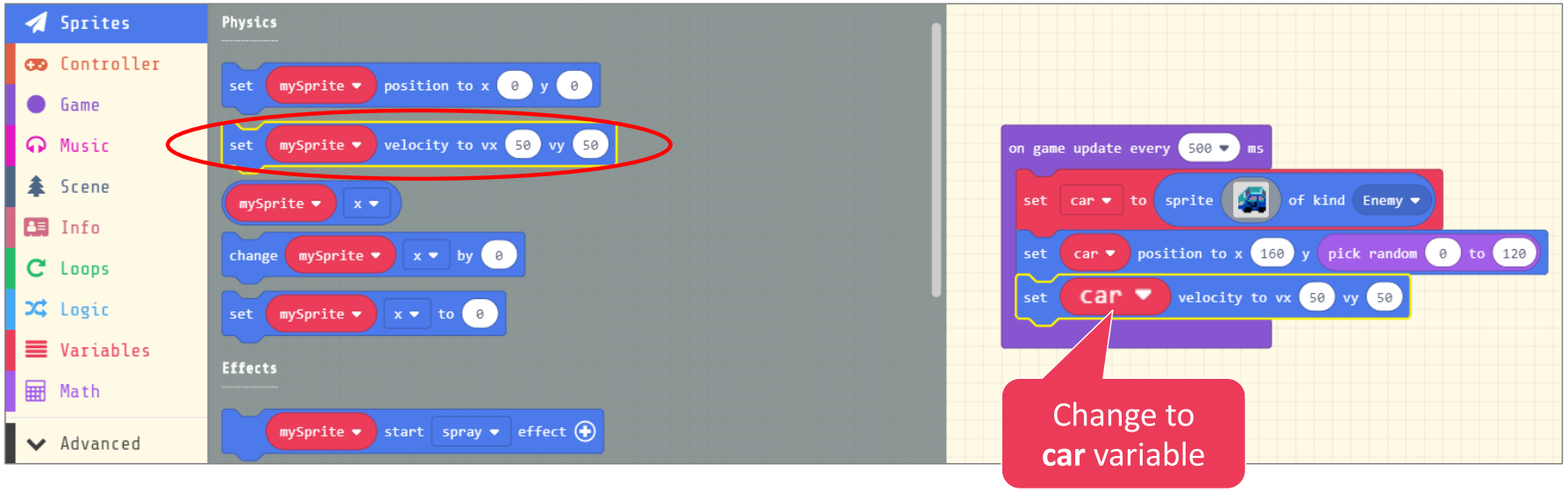
- Set a random vertical position of the cars

  Y = Random number between 0 and 120



Set the speed and direction of the cars

- From the **Sprites** Toolbox drawer, drag a **Set Velocity** block, and drop after the **Set Position** block

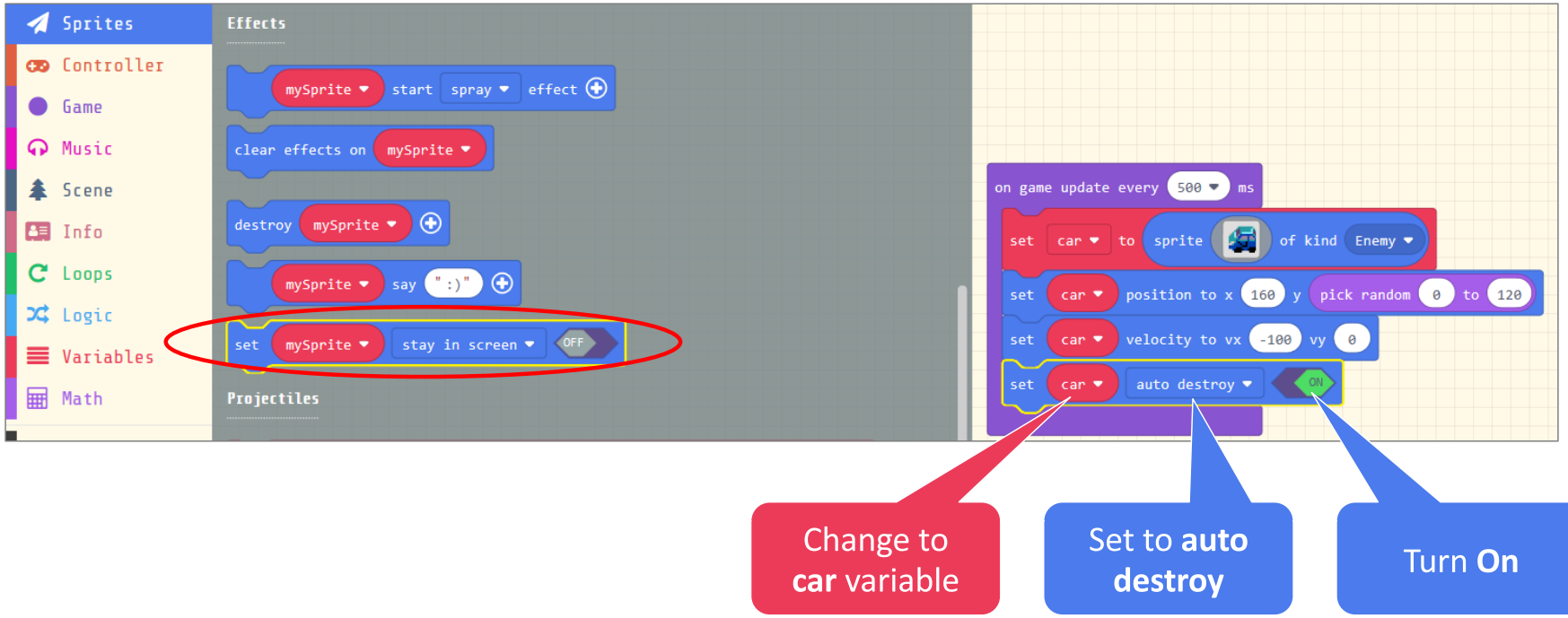


- Cars will be driving from right to left, so

  Set **vx = -100** and **vy = 0**

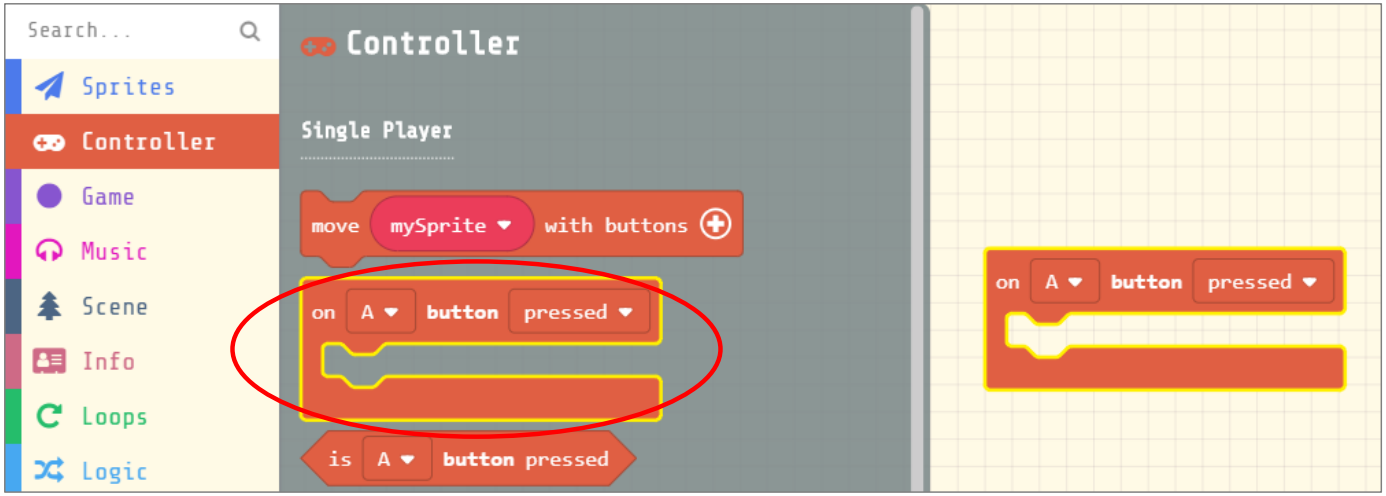
Set the cars to destroy themselves off screen

- From the **Sprites** Toolbox drawer, under Effects, drag a **Set Sprite flag** block, and drop after the **Set Velocity** block



Spit seeds at the cars

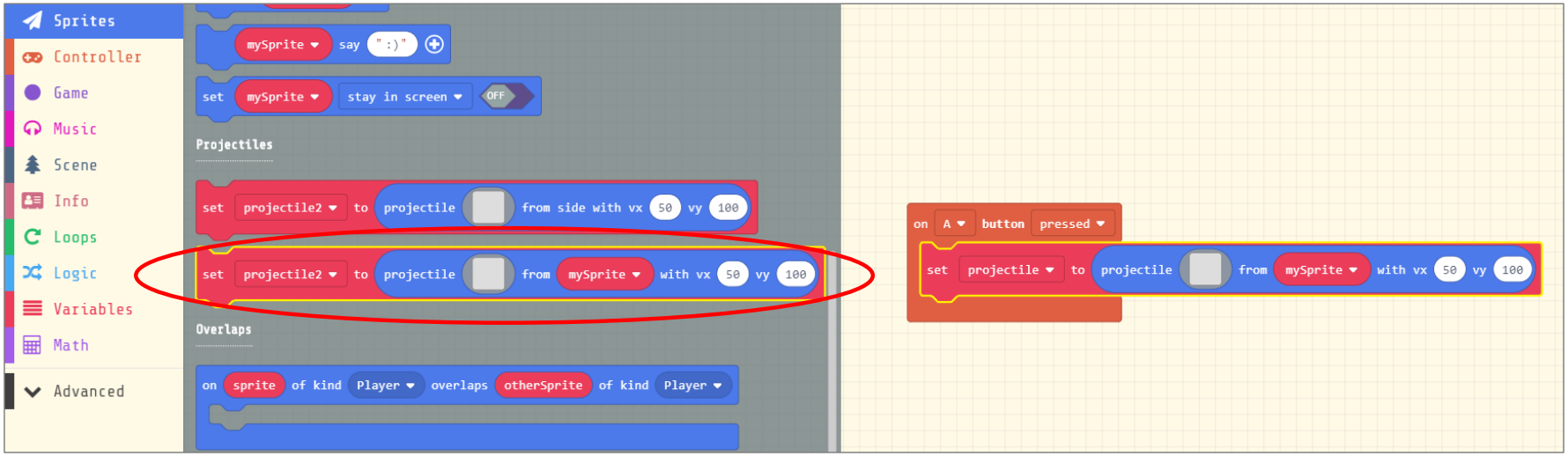
- From the **Controller** Toolbox drawer, drag a **On A Button pressed** block, and drop onto Workspace



- From the **Sprites** Toolbox drawer, in the Projectiles category, drag a Set Projectile block into the **On A Button pressed** block

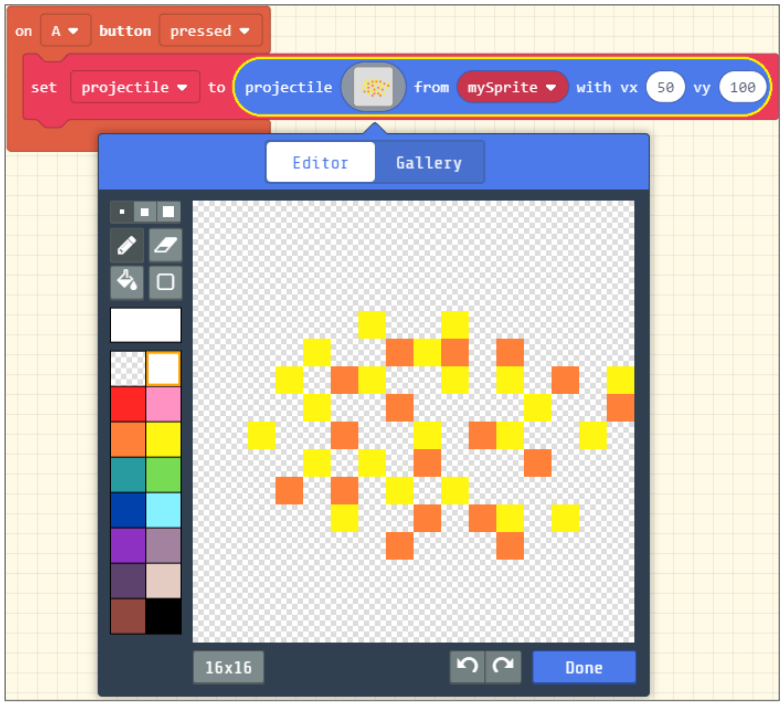
Spit seeds at the cars

- From the **Sprites** Toolbox drawer, in the Projectiles category, drag a **Set Projectile from Sprite** block into the **On A Button pressed** block



Design your seed projectiles

- In the **Projectile** block, click on the empty Image
- Design your own seed projectiles using the Image Editor
- When done, click Done

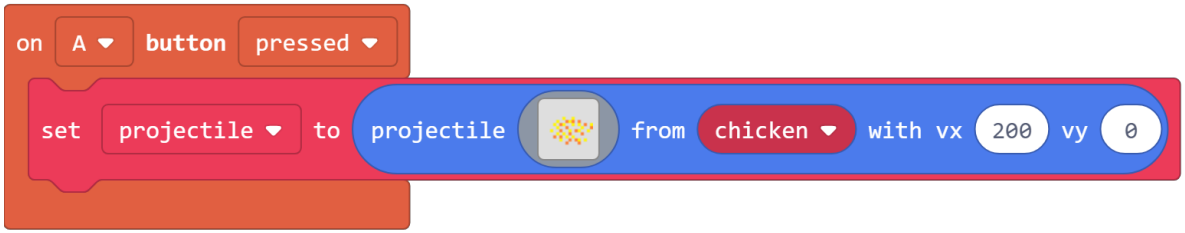


Set the speed and direction of seed projectiles

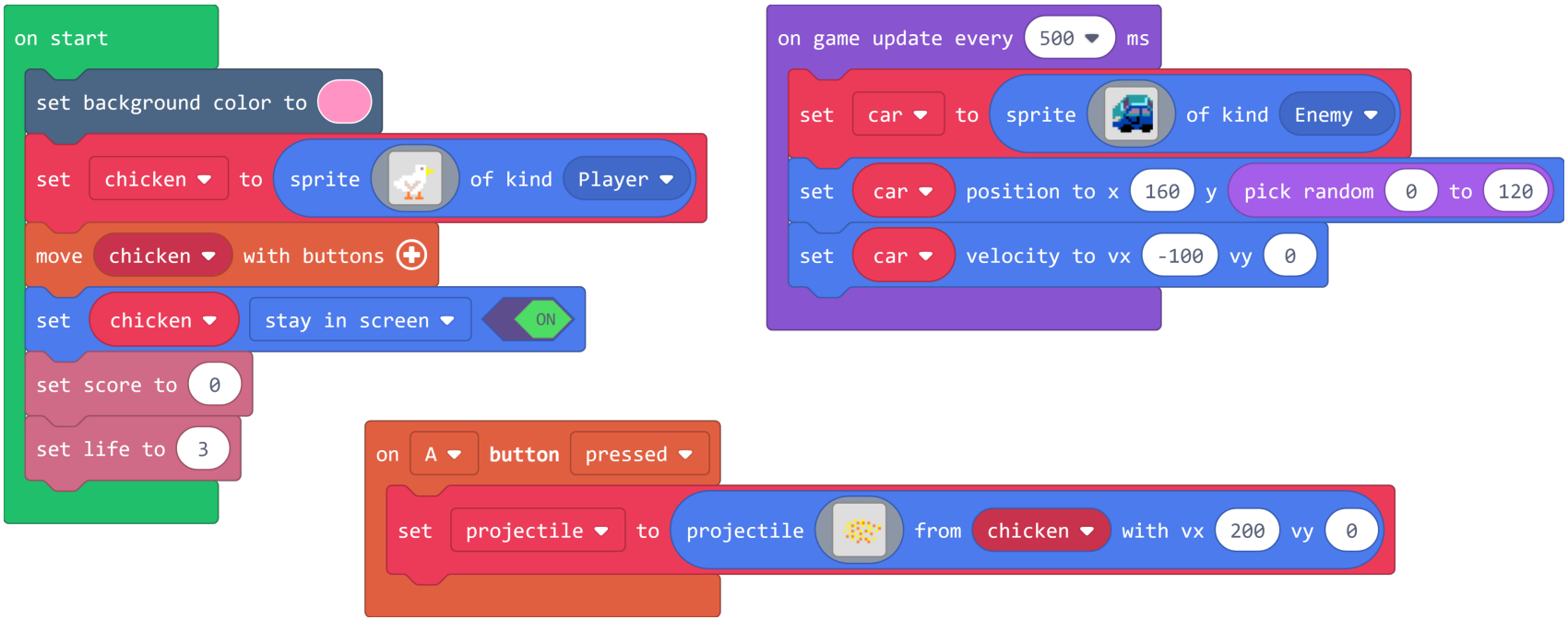
- In the **Projectile** block, click on the variable drop-down menu to select **chicken**

- Seeds will be shooting from the chicken, from left to right

  Set **vx = 200** and **vy = 0**



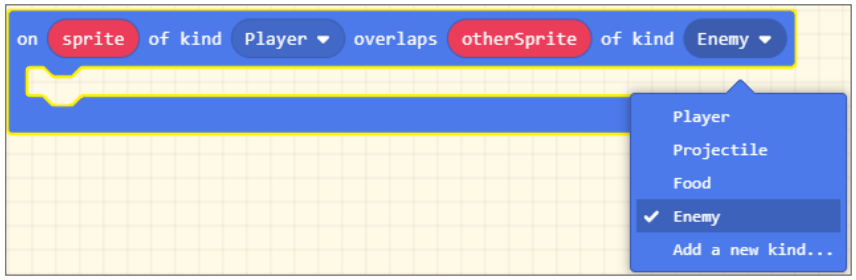
Code so far…


on start
set background color to
set chicken to sprite of kind Player
move chicken with buttons
set chicken stay in screen ON
set score to 0
set life to 3
on game update every 500 ms
set car to sprite of kind Enemy
set car position to x 160 y pick random 0 to 120
set car velocity to vx -100 vy 0
on A button pressed
set projectile to projectile from chicken with vx 200 vy 0

When the Chicken gets run over by a car

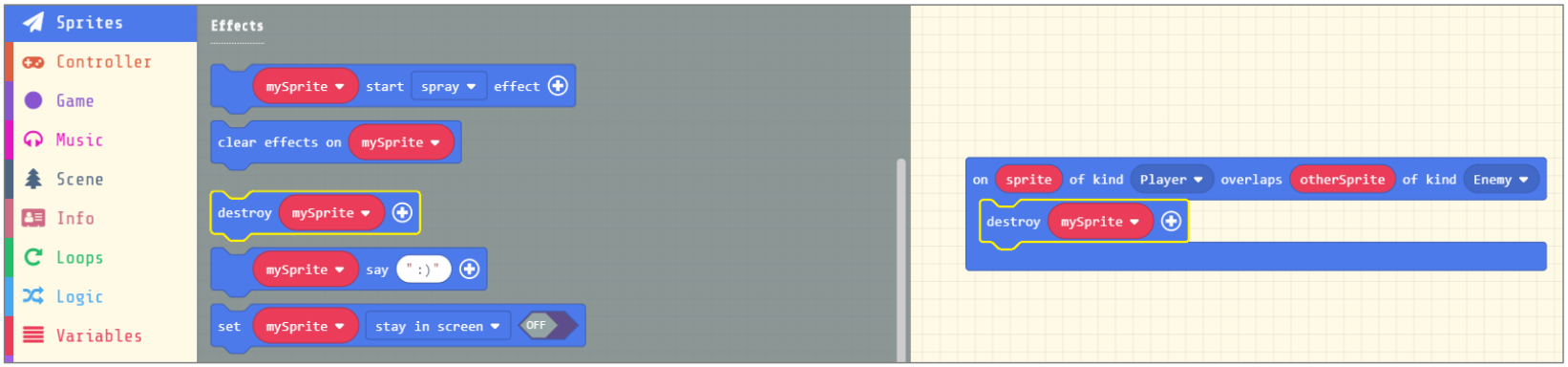
- From the **Sprites** Toolbox drawer, in the Overlaps category, drag an **On Sprite Overlaps** block onto the Workspace

- In the 2nd drop-down menu, change the sprite kind to **Enemy**

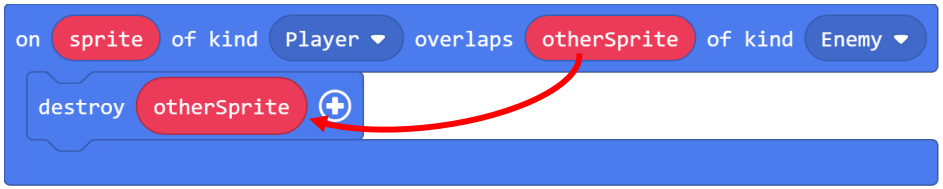


Destroy the car

- From the **Sprites** Toolbox drawer, in the Effects category, drag a **Destroy Sprite** block into the **On Sprite Overlaps** block

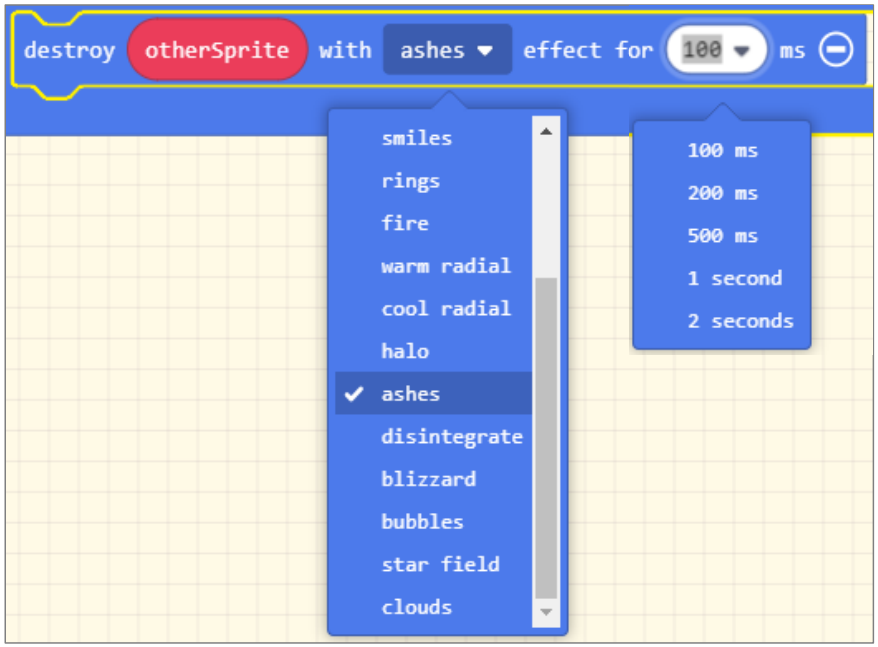


- In the **On Sprite Overlaps** block, drag the **otherSprite** variable into the **Destroy Sprite** block replacing **mySprite**



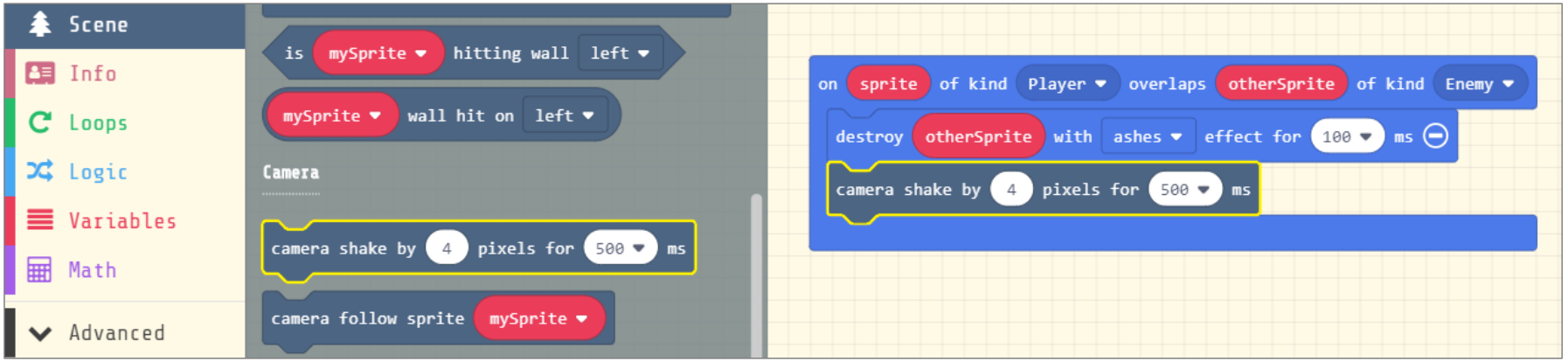
Add an Effect when car gets destroyed

- In the **Destroy Sprite** block, click the plus (+) sign to expand
- Click the drop-down menu to select an Effect
- Change the duration to **100** milliseconds



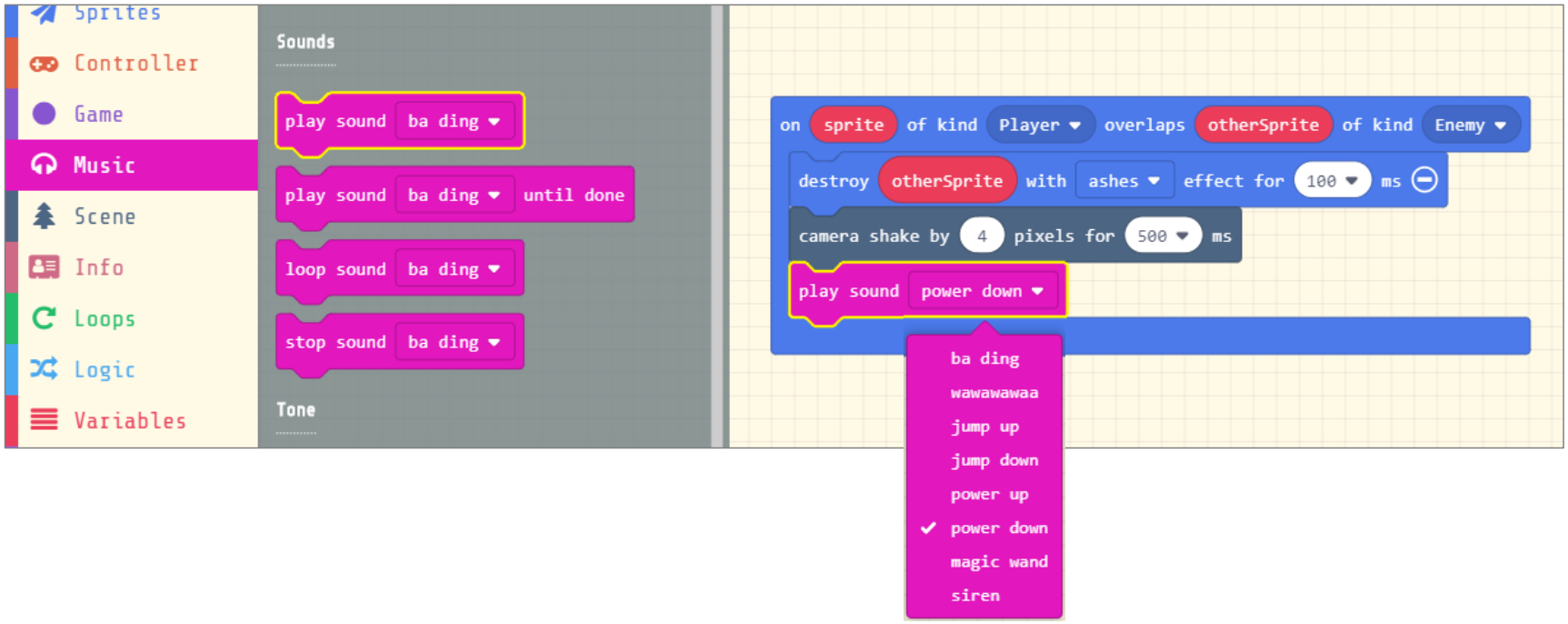
Add a camera shake when chicken gets hit

- From the **Scene** Toolbox drawer, under the Camera category, drag a **Camera Shake** block into the **On Sprite Overlaps** block after the **Destroy Sprite** block



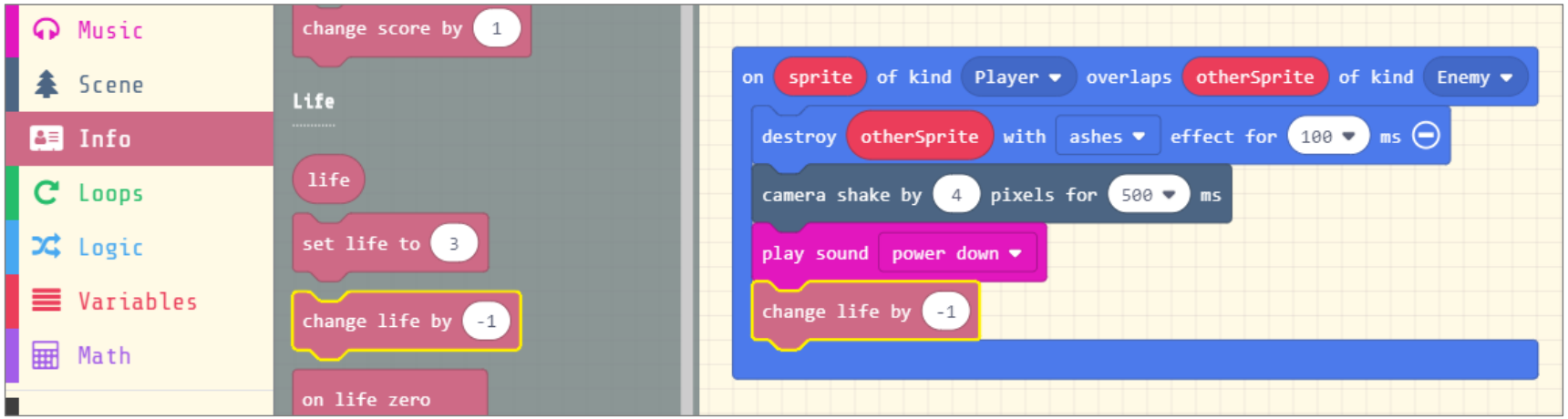
Add a sound when chicken gets hit

- From the **Music** Toolbox drawer, drag a **Play Sound** block after the **Camera Shake** block
- Use the drop-down menu to select a sound to play



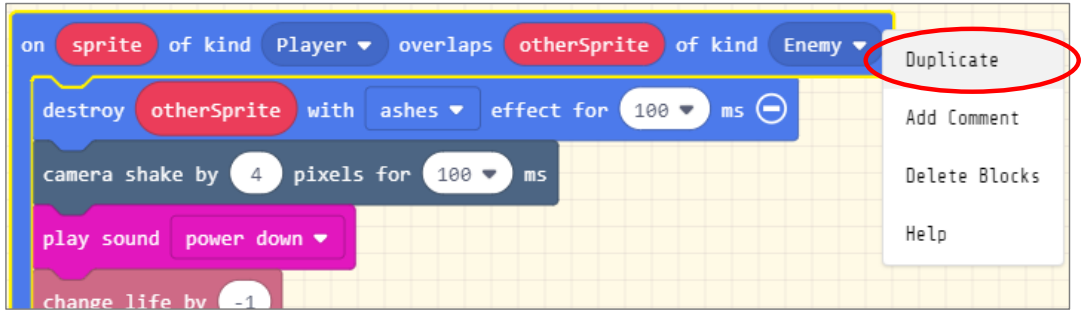
Decrement Chicken's Life

- From the **Info** Toolbox drawer, drag a **Change Life by -1** block after the **Play Sound** block



When Seeds hit a car

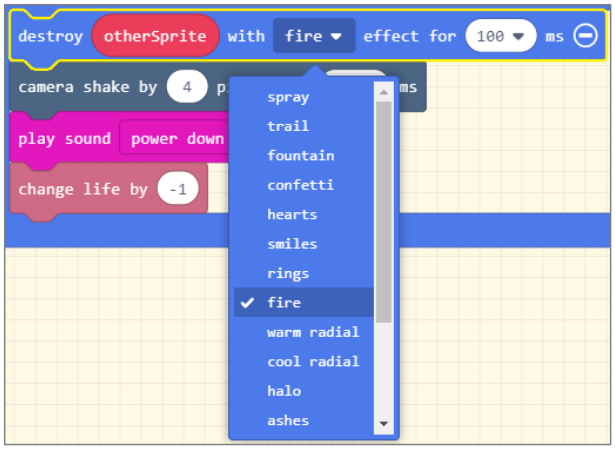
- Right-click on the **On Sprite Overlaps** block in the Workspace, and select **Duplicate**



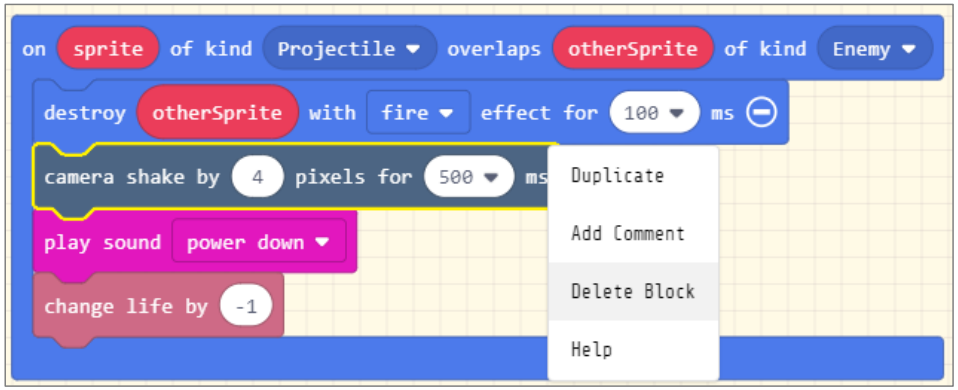
- In the 2nd **On Sprite Overlaps** block, click on the 1st drop-down menu to change the sprite kind to **Projectile**

Change the car destroyed Effect

- In the **Destroy Sprite** block, select a different Effect

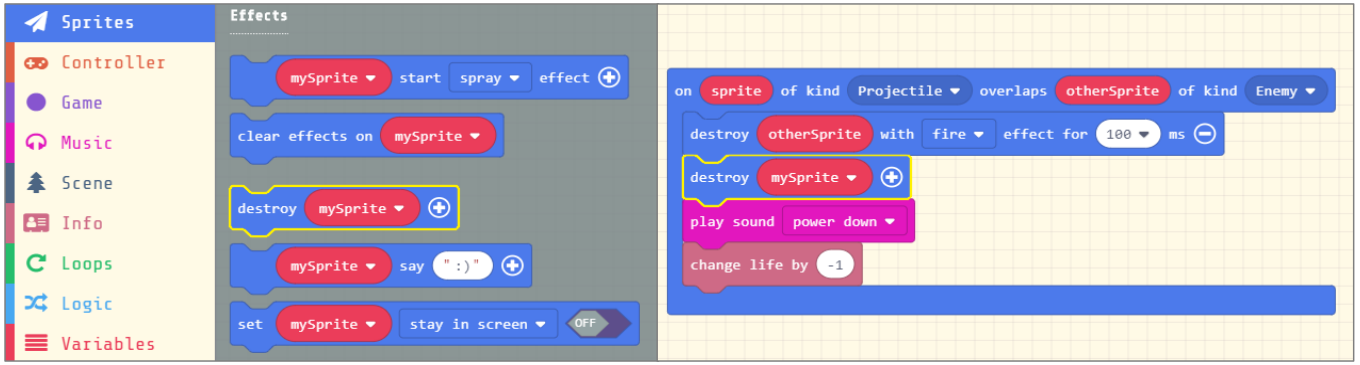


- Delete the **Camera Shake** block by selecting it and pressing the delete key on your keyboard, or right-clicking and selecting Delete Block

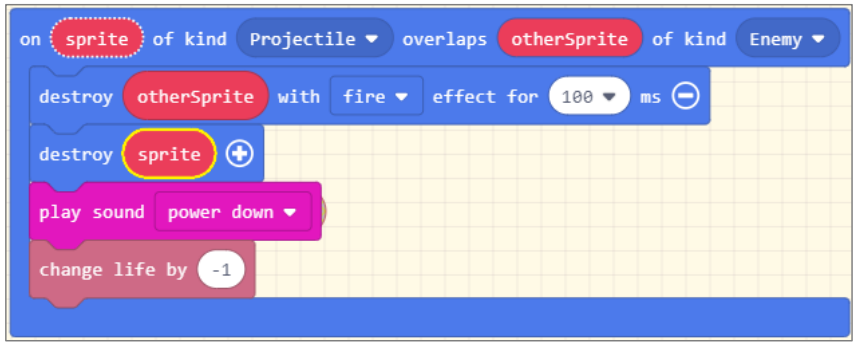


Destroy the Seeds

- From the **Sprites** Toolbox drawer, drag another **Destroy Sprite** block and drop after the first **Destroy Sprite** block

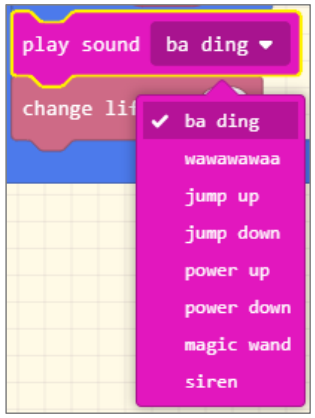


- From the **On Sprite Overlap** block, drag the **Sprite** variable block into the 2nd **Destroy Sprite** block replacing the **mySprite** variable

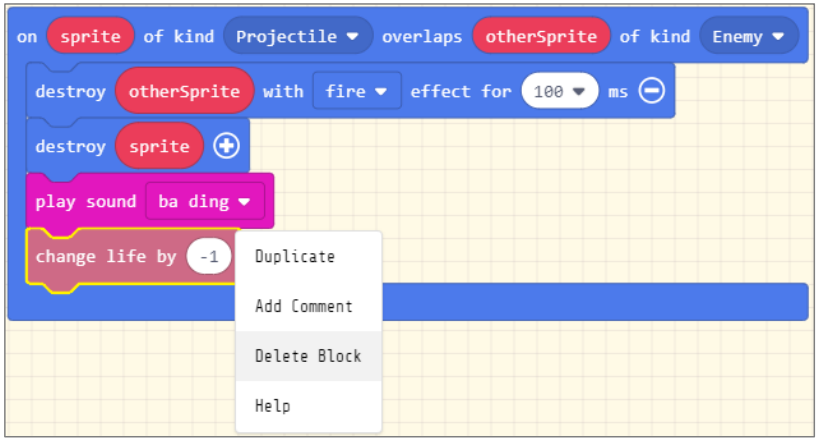


Change the sound

- In the **Play Sound** block, select a different sound effect

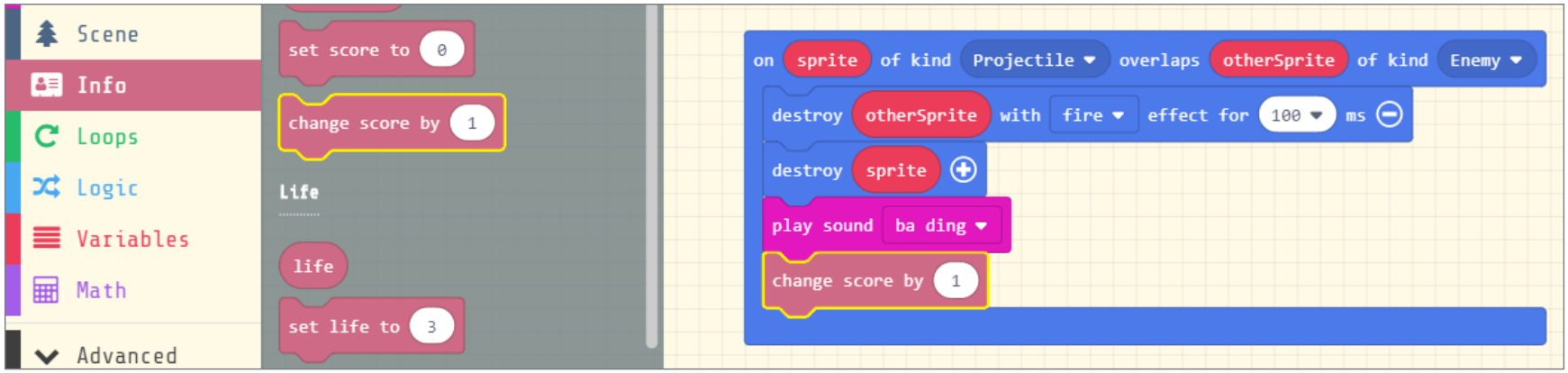


- Delete the **Change Life** block

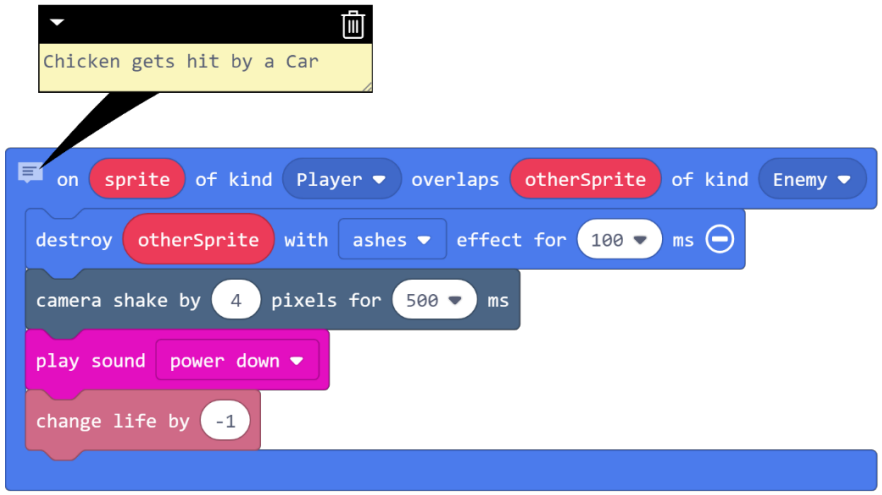


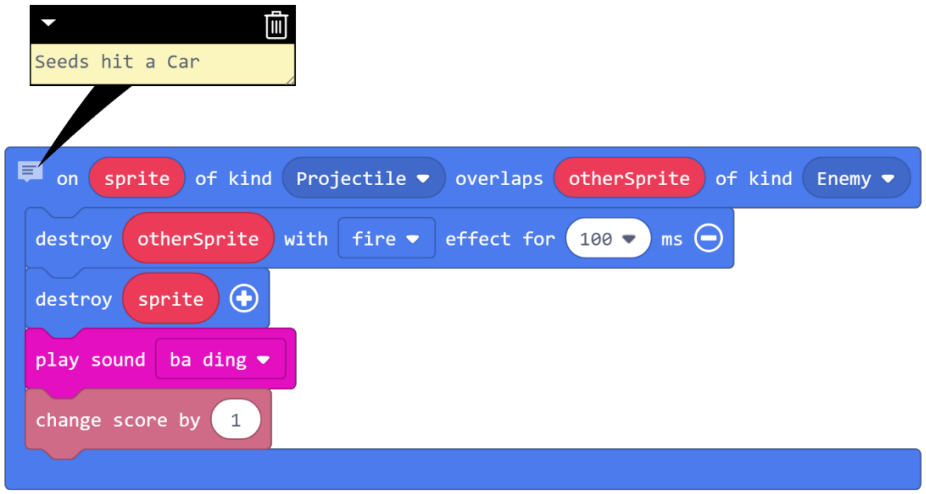
Increment the Score

- From the **Info** Toolbox drawer, drag a **Change Score** block after the **Play Sound** block



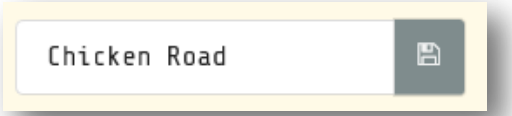
Two Overlap Events





Share your Game

- Name your Game



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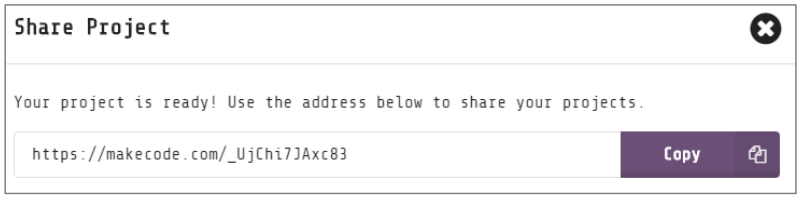
- Copy the URL somewhere



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